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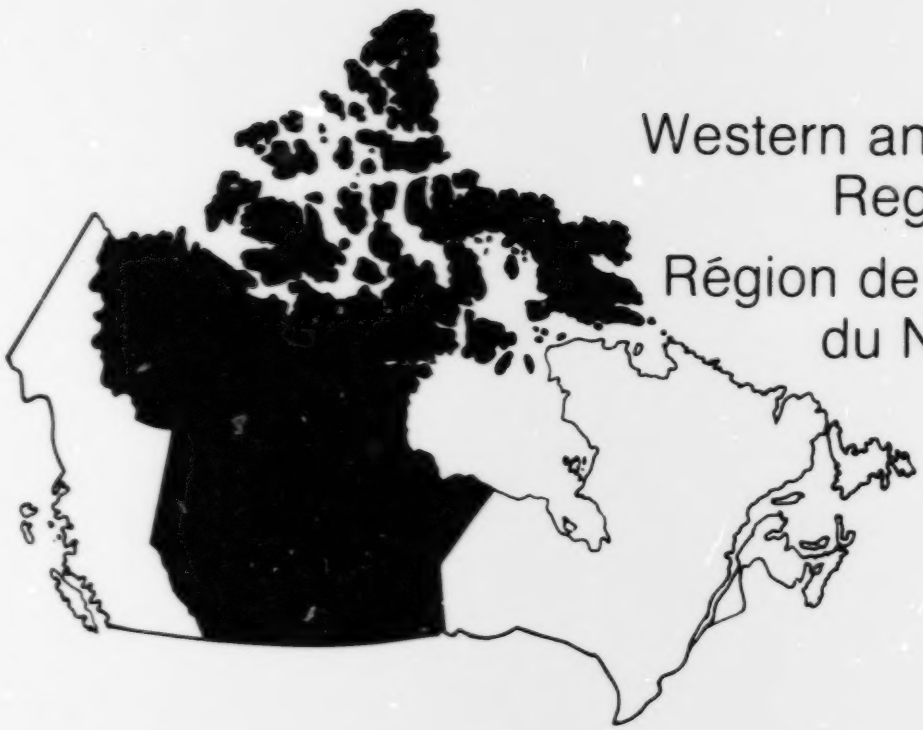

Western and Northern Region

Région de l'Ouest et du Nord

Environmental Education in Manitoba - What's Important?
by
Educase Learning Systems Inc.

W&NR-87/88-CP (EP)-2C
June 1987

Environmental Protection Service

Service de la protection de l'environnement

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by
Educase Learning Systems Inc.

for the

Manitoba District Office
Environmental Protection
Conservation and Protection
Environment Canada

Report W&NR-87/88-CP(EP)-2C
June 1987

REVIEW NOTICE

This report has been reviewed by the Environmental Protection Directorate, Conservation and Protection Western and Northern Region and approved for publication in its regional report series. Approval does not necessarily signify that the contents reflect the views and policies of Environment Canada.

READERS COMMENTS

Readers who wish to comment on the content of this report should address their comments to:

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ENVIRONMENTAL EDUCATION IN MANITOBA--WHAT'S IMPORTANT?

EXECUTIVE SUMMARY

The purpose of the survey was to determine if a public mandate exists for Environmental Education in the curriculum and to identify areas of public concern in order to formulate objectives and identify curriculum content for Environmental Education.

The survey examined three aspects of Environmental Education; its role, its content, and its importance relative to other subjects in the school curriculum. Responses were registered by marking one of four boxes representing a 4-point Likert-type scale of importance headed "very important", "fairly important", "not too important" and "not important". A fifth box allowed a "don't know" response. The 4-point scale restricted neutral responses.

The methodology of the survey was based on five assumptions; 1) public policy is most strongly influenced by organized groups rather than by individuals, 2) leaders tend to reflect the values, concerns, and priorities of the groups they lead even when expressing their individual opinions, 3) leaders tend to be better informed than non-leaders, 4) leaders are more likely to act on their beliefs than are non-leaders, and 5) all members of society are either formally or informally represented by one or more organized groups.

Response forms accompanied by self-addressed envelopes were mailed to 115 environmental stakeholders representing 102 organizations resulting in 61 responses. An environmental stakeholder was defined as anyone who has some stake in preserving the environment. Since human life depends upon the preservation of a livable environment, everyone and every organization is in some sense an environmental stakeholder. The stakeholder groups were aggregated in three categories; industrial-commercial, prosocial, and occupationally-oriented.

The results of this survey demonstrated a strong mandate for Environmental Education, a mandate emanating from across the social spectrum. Eighty-six percent of respondents considered teaching about the environment and its problems very important. None considered it less than "fairly important". Environmental Education was ranked very close in importance to the traditional basic subjects of geography and literature and well above French, music, and industrial arts. All comments by respondents on the questionnaire emphasized the importance of Environmental Education.

Teaching about the environment was considered very important by 87% and fairly important by 13% of respondents for a total of 100%. Teaching how to solve environmental problems was considered very important by 51% and fairly important by 38% for a total of 89% Motivating students to work toward solving environmental problems was considered very important by 59% and fairly important by 26% totaling 85%.

Teaching about air and water pollution and economic factors in the environment were rated as very important by the highest percentage of respondents (79% and 77% respectively).

On a scale of 1-4, respondents ranked Environmental Education (3.36) high among school subjects, well ahead of such subjects as Physical Education (3.11), French (2.87), Music (2.59), and Home Economics (2.52).

Comments emphasized the importance of Environmental Education. Many respondents suggested that Environmental Education should be integrated into other subjects in the curriculum while some suggested that it be experience-based. This study clearly demonstrates that Environmental Education is viewed as a component of basic education.

Support for environmental field trips was not as high as that for other aspects of Environmental Education. Comments by respondents indicated a concern about quality and cost effectiveness of field trips.

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ENVIRONMENTAL EDUCATION IN MANITOBA--WHAT'S IMPORTANT?

INTRODUCTION

In response to a survey, revealing public support for increased spending for education about the environment, the Manitoba Department of the Environment convened a public meeting in 1983 to hear the views of interested groups on matters relating to the environment and public health and safety. Following this meeting, the Environmental Education Review Committee (EERC) was formed for the purpose of promoting Environmental Education with Dianne J. Beaven, Executive Director of the Manitoba Forestry Association as its chairperson. The EERC comprises individual members and representatives of environmental organizations and national, provincial, and municipal agencies concerned with environmental matters. The Manitoba Forestry Association has played a major role in supporting and coordinating the activities of the committee.

The goals of the EERC are:

1) to assess the degree to which Environmental Education is being provided by Manitoba schools and;

2) to assist in providing instructional resources for Environmental Education in Manitoba.

These goals have been translated into the following five objectives:

1) identify deficiencies in and unmet needs for Environmental Education in Manitoba schools;

2) provide leadership in the design and implementation of effective programs of Environmental Education for Manitoba's schools;

3) identify, evaluate and make available to Education Manitoba Environmental Education resources already in existence;

4) obtain financial support for the procurement and development of resources for Environmental Education in Manitoba and;

5) stimulate interest in and concern about Environmental Education by government agencies at all levels and by all segments of the public including private organizations, the business community and individuals.

The EERC has analyzed Education Manitoba's Kindergarten through Grade 12 (K-12) curriculum guides. The analysis revealed that the guides do contain a relatively comprehensive set of environmental objectives.

Of greater concern it was determined that a conceptual framework for Environmental Education is lacking and that the subject is presented in a fragmented manner, overlapping in scope and sequence and often mismatched to the level of intellectual and emotional development of students.

This survey funded by Environment Canada on behalf of the EERC contributed to the achievement of two of EERC's objectives,

> to provide leadership in the design and implementation of effective programs of Environmental Education for Manitoba's schools;
>
> to stimulate interest in and concern about Environmental Education by government agencies at all levels and by all segments of the public including private organizations, the business community and individuals.

If Environmental Education is to have a place in an already overcrowded curriculum, it must have a base of public support. The purposes of the survey were:

a. to determine if a public mandate exists for Environmental Education in the curriculum and;

b. to identify areas of public concern from which to formulate objectives and identify curriculum content for Environmental Education.

DESCRIPTION OF THE SURVEY

The survey comprised four tasks; 1) design of a response form, 2) identification of target population, 3) selection of respondents, 4) recovery of responses.

Design of the Response Form

The response form was designed to elicit views relating to three different aspects of Environmental Education; its role, its content, and its importance relative to other subjects in the school curriculum. Responses were registered by marking one of four boxes representing a 4-point Likert-type scale of importance headed "very important", "fairly important", "not too important" and "not important". A fifth box allowed a "don't know" response. The 4-point scale restricted neutral responses (Appendix I).

Part I - The Role of Environmental Education

This section assessed the importance placed on 1) teaching about the environment and its problems, 2) teaching how to solve environmental problems, and 2) motivating students to want to solve environmental problems.

Part II - The Environment and Its Problems

This section asked respondents to indicate the importance they placed on each of 23 environmental concepts and concerns.

Part III - The Importance of Environmental Education

The purpose of this section was to establish the importance of Environmental Education in comparison to other subjects in the curriculum.

The Population Surveyed

The following five assumptions were made in identifying the population to be surveyed: 1) public policy is most strongly influenced by organized groups rather than by individuals, 2) leaders tend to reflect the values, concerns, and priorities of the groups they lead even when expressing their individual opinions, 3) leaders tend to be better informed than non-leaders, 4) leaders are more likely to act on their beliefs than are non-leaders, and 5) all members of society are either formally or informally represented by one or more organized groups.

In view of the above assumptions, conventional random sampling methods were not used. Instead, leaders of "environmental stakeholder" organizations were surveyed. For purposes of this study, the term "organization" means "any group with a name and enrolled members" or "any business with employees".

An environmental stakeholder is anyone who has some stake in preserving the environment. Since human life depends upon the preservation of a livable environment, everyone and every organization is in some sense an environmental stakeholder. Stakeholder groups were defined so that every member of society could be identified with at least one group. Accordingly, this survey should accurately reflect what society considers important in Environmental Education.

The categories of organizations identified as comprising the major environmental stakeholder groups in Manitoba are listed in Table 1.

TABLE 1

CATEGORIES AND NUMBERS OF ORGANIZATIONS
SURVEYED WITH NUMBER RESPONDING

Category	Number surveyed	Number responding
Religious organizations	4	4
Ethnic organizations	1	1
Service clubs	5	3
Conservation organizations	15	10
Resource related industries	8	6
Health and safety professionals	18	3
Labour organizations	3	1
Native and Metis organizations	5	0
Commercial and professional groups	12	9
Social action organizations	6	6
Business and industry associations	17	12
Political organizations and politicians	4	4
Agricultural organizations	4	1
Total number of organizations	102	60
Unclassifiable response		1

Selection of Respondents

The larger organizations in each of the categories were identified. Response forms were sent to presidents of organizations and companies based in Manitoba and to local managers of companies based outside of Manitoba. In cases in which it was not possible to identify a chief executive officer, office staff were asked to have a member of the executive respond. Since the intent was to obtain the views of the "culture" represented by the respective stakeholder groups rather than the public positions of their organizations, the only real consideration was that someone in a leadership role complete the response form. Response forms accompanied by self-addressed envelopes were mailed to 115 individuals representing 102 organizations. The number of individuals exceeded the number of organizations because two persons in each of 13 large organizations were contacted.

Recovery of Responses

Each response form was accompanied by an individualized cover letter explaining the nature and purpose of the survey and assuring confidentiality of individual responses. Two weeks after the forms were mailed out, follow-up telephone calls were made to individuals who had not responded.

Survey recipients who failed to respond gave a variety of reasons for not having completed the form. Some felt it was too personal. Others did not view Environmental Education as part of the mandate of their organization and declined to complete the questionnaire as individuals. One respondent took special pains to conceal the identity of his organization which accounts for the unclassifiable response (table 1).

The return rate of 59.8% which would have been considered satisfactory for a conventional mail out survey was disappointingly low. By selecting persons in leadership roles and following up with telephone calls it had been the hope that a higher rate of return might have been achieved.

RESULTS OF THE SURVEY

Data from the survey are presented in tabular form in tables 2-26.

Organization of Data

Because only a single response was received from many stakeholder groups, it was necessary to aggregate several groups for reporting in order to protect confidentiality. Three groupings were formed in this way: industrial-commercial, prosocial, and occupationally-oriented. The groupings were composed of the following stakeholder groups:

Industry and Commerce Grouping (Membership based on business or commercial activities)
- Resource related industries and organizations
- Business and industry associations
- Agriculture

Prosocial Grouping (Membership based on personal commitment to some social cause)
- Religious and church organizations
- Ethnic groups
- Native and Metis organizations
- Political organizations and politicians
- Conservation organizations
- Social action groups

Occupationally-oriented Grouping (Membership based on occupation)
- Health and safety professionals
- Labour organizations
- Commercial and professional groups

Overall results of the survey are described in part 1 while responses of groupings are described in part 2 of this section. Results are reported in terms of level of importance and percentages of respondents checking each level of importance for each item.

Level of Importance: The mean level of importance was computed for each item in the following manner: 1) weights of 1, 2, 3, and 4 were assigned respectively to "not important", "not too important", "fairly important", and very important"; 2) the weight of each level was multiplied by the number of respondents marking that level; the sum of the products for each item was divided by the total number of responses to that item. This yielded a mean level of importance for each item.

Response Frequency: This was expressed as a percent of respondents marking each level of importance for each item. Because respondents did not always respond to every item on the response form, the percentages did not always total 100.

Overall Survey Results

Role of Environmental Education: Teaching about the environment was ranked highest in level of importance (3.87) followed by motivating students to work to solve environmental problems (3.39). Ranked lowest in level of importance at 3.36 was teaching students how to solve environmental problems (table 2). The lower ranking assigned to teaching how to solve environmental problem as compared to teaching about environmental problems is evident in figure 1.

Teaching about the environment was considered very important by 87% and important by 13% of respondents for a total of 100%. Teaching how to solve environmental problems was considered very important by 51% and important by 38% of respondents while 59% considered it very important and 26% considered it important to motivate students to work toward solving environmental problems (table 3).

The environment and its problems: Respondents ranked equally teaching about the importance of economic factors and the environment and the causes and effects of air and water pollution as most important (3.72). Teaching about the control of world population (3.08) and the importance of preserving cultural heritage (2.92) were considered least important (table 4).

An overwhelming majority of respondents rated all items listed as either fairly or very important (table 5). Even teaching about preserving cultural heritage, the lowest ranked item (see table 4) was considered fairly important by 43% of respondents and very important by 31% for a total of 74%.

TABLE 2

ROLE OF ENVIRONMENTAL EDUCATION
RANKED BY ALL RESPONDENTS

QUESTION	
How important is it that students be:	
Taught about the environment and its problems?	3.87
Motivated to work to solve environmental problems?	3.39
Taught how to solve environmental problems?	3.36

TABLE 3

ROLE OF ENVIRONMENTAL EDUCATION
RATED BY ALL RESPONDENTS

	IMPORTANCE				
QUESTION	Very	Fairly	Not Too	Not	Don't Know
How important is it that students be:					
1. Taught about the environment and its problems?	87%	13%	0%	0%	0%
2. Taught how to solve environmental problems?	51%	38%	10%	0%	2%
3. Motivated to work to solve environmental problems?	59%	26%	11%	2%	2%

FIGURE 1

IMPORTANCE OF THREE ROLES FOR ENVIRONMENTAL EDUCATION

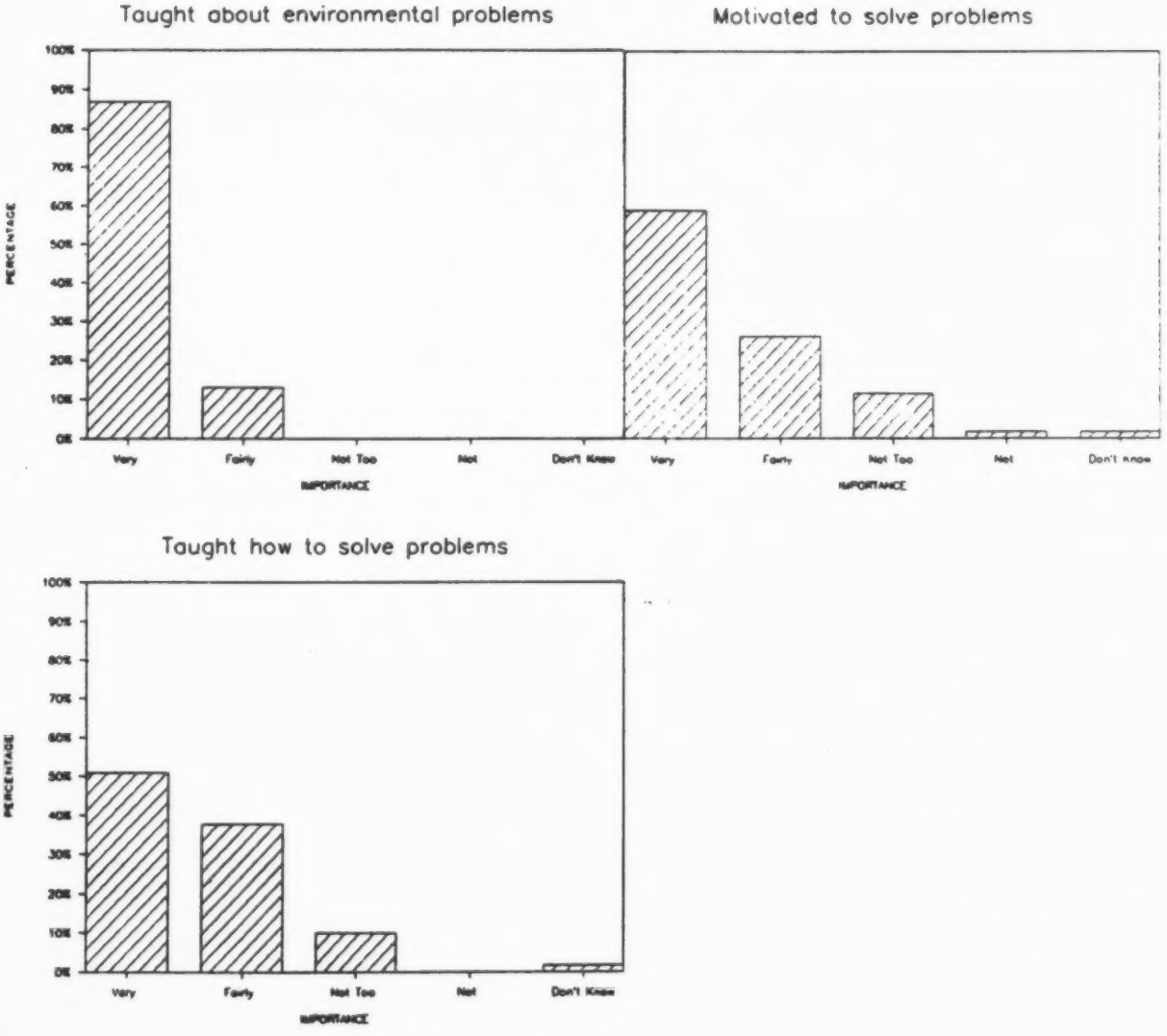

TABLE 4

THE IMPORTANCE OF INFORMATION ABOUT THE ENVIRONMENT AND ITS PROBLEMS AS RANKED BY ALL RESPONDENTS

QUESTION	
How important is it to teach about:	
Economic factors?	3.72
The causes and effects of air and water pollution?	3.72
Protection of agricultural lands?	3.64
The benefits and risks of chemicals such as pesticides?	3.64
Causes and effects of acid rain?	3.61
Conservation and management of water resources?	3.57
Basic principles of ecology?	3.54
The importance of forests, lakes, streams & soils?	3.54
The benefits and risks of various energy sources?	3.48
Forest management and protection?	3.48
Management and disposal of hazardous wastes?	3.46
The importance of habitat to Manitoba's wildlife?	3.46
Protect plant & animal species from becoming extinct?	3.46
The causes and effects of damage to the ozone layer?	3.44
Importance of water quality to aquatic life?	3.41
Life style?	3.36
Conserve tropical rain forests?	3.33
Increasing atmospheric carbon dioxide?	3.33
Preventing litter and noise pollution?	3.33
Preserving natural heritage such as wilderness areas?	3.31
Political factors?	3.30
Control world population?	3.08
Preserving cultural heritage?	2.92

TABLE 5

THE IMPORTANCE OF INFORMATION ABOUT THE ENVIRONMENT AND ITS PROBLEMS AS RATED BY ALL RESPONDENTS

QUESTION	IMPORTANCE				
	Very	Fairly	Not Too	Not	Don't Know
How important is it to teach:					
1. Basic principles of ecology?	64%	30%	5%	0%	2%
2. The importance of forests, lakes, streams & soils?	56%	43%	2%	0%	0%
3. The importance of habitat to Manitoba's wildlife?	54%	39%	5%	2%	0%
How important is it to teach about:					
1. Protection of agricultural lands?	72%	21%	5%	2%	0%
2. Forest management and protection?	57%	36%	5%	0%	0%
3. Conservation and management of water resources?	64%	31%	3%	2%	0%
4. Importance of water quality to aquatic life?	59%	26%	13%	0%	0%
How important is it to teach about the need to:					
1. Conserve tropical rain forests?	51%	38%	7%	3%	2%
2. Protect plant & animal species from becoming extinct?	56%	38%	5%	0%	2%
3. Control world population?	46%	31%	13%	5%	5%
How important is it to teach about:					
1. The causes and effects of air and water pollution?	79%	18%	2%	0%	0%
2. Management and disposal of hazardous wastes?	64%	21%	13%	0%	2%
3. The benefits and risks of various energy sources?	64%	23%	11%	0%	0%
4. The benefits and risks of chemicals such as pesticide	67%	30%	3%	0%	0%
How important is it to teach about:					
1. The causes and effects of damage to the ozone layer?	61%	26%	11%	0%	0%
2. Increasing atmospheric carbon dioxide?	52%	33%	11%	2%	0%
3 Causes and effects of acid rain?	69%	26%	3%	0%	0%
How important is it to teach the value of:					
1. Preserving cultural heritage?	31%	43%	15%	10%	0%
2. Preserving natural heritage such as wilderness areas?	54%	30%	11%	3%	0%
3. Preventing litter and noise pollution?	51%	38%	7%	3%	0%
How important is it to teach about problems as they relate to:					
1. Economic factors?	77%	20%	2%	2%	0%
2. Political factors?	54%	31%	8%	3%	0%
3. Life style?	52%	38%	5%	3%	0%

Teaching about the importance of controlling world population received the largest number of "don't know" responses (5%) and was rated as not too important by 13% and not important by 5% of respondents.

Teaching about cultural heritage was rated "not to important" by the highest percentage of respondents (15%) and not important by another 10% if respondents.

Consistent with their ranking, teaching about air and water pollution and economic factors in the environment were rated as very important by the highest percentage of respondents (79% and 77% respectively).

Results for Groupings

Results for the prosocial grouping are presented in tables 6-9, occupationally-oriented grouping in tables 10-13, and the industrial-commercial grouping in table 14-17.

Prosocial grouping (28 responses)
Role of Environmental Education: This grouping ranked teaching about the environment and its problems highest in importance (3.83, table 6). It was rated as very important by 83% of the respondents (table 7). Teaching how to solve environmental problems was rated as very important by 65% and motivating students to work to solve environmental problems was rated very important by 74% of respondents (table 7).

The environment and its problems: Teaching about protecting agricultural land (3.91) and conservation and management of water resources (3.87) were ranked highest in importance by leaders of prosocial groups while teaching about control of world population (3.13) and preserving cultural heritage (2.91) were ranked lowest (table 8).

Teaching about the protection of agricultural lands was considered very important by 91% of this grouping, ahead of teaching about conservation and management of water resources; the causes and effects of air and water pollution; and the causes and effects of damage to the ozone layer all of which were rated as very important by 87% of the prosocial respondents (table 9).

Teaching about control of world population received the lowest percentage of "very important" responses (52%). The topic was rated as fairly important by 30% of respondents.

TABLE 6

ROLE OF ENVIRONMENTAL EDUCATION AS RANKED BY THE PROSOCIAL GROUPING

QUESTION	
How important is it that students be:	
Taught about the environment and its problems?	3.83
Motivated to work to solve environmental problems?	3.74
Taught how to solve environmental problems?	3.65

TABLE 7

ROLE OF ENVIRONMENTAL EDUCATION AS RATED BY THE PROSOCIAL GROUPING

	IMPORTANCE				
QUESTION	Very	Fairly	Not Too	Not	Don't Know
How important is it that students be:					
1. Taught about the environment and its problems?	83%	17%	0%	0%	0%
2. Taught how to solve environmental problems?	65%	35%	0%	0%	0%
3. Motivated to work to solve environmental problems?	74%	26%	0%	0%	0%

TABLE 8

THE IMPORTANCE OF INFORMATION ABOUT THE ENVIRONMENT AND ITS PROBLEMS AS RANKED BY THE PROSOCIAL GROUPING

QUESTION	
How important is it to teach:	
Protection of agricultural lands?	3.91
Conservation and management of water resources?	3.87
Economic factors?	3.83
The benefits and risks of chemicals such as pesticides?	3.83
Management and disposal of hazardous wastes?	3.78
The importance of habitat to Manitoba's wildlife?	3.74
The importance of forests, lakes, streams & soils?	3.74
The causes and effects of air and water pollution?	3.74
Causes and effects of acid rain?	3.74
The causes and effects of damage to the ozone layer?	3.74
Importance of water quality to aquatic life?	3.70
The benefits and risks of various energy sources?	3.61
Increasing atmospheric carbon dioxide?	3.57
Basic principles of ecology?	3.52
Life style?	3.48
Forest management and protection?	3.48
Protect plant & animal species from becoming extinct?	3.43
Preserving natural heritage such as wilderness areas?	3.43
Conserve tropical rain forests?	3.39
Political factors?	3.39
Preventing litter and noise pollution?	3.22
Control world population?	3.13
Preserving cultural heritage?	2.91

TABLE 9

THE IMPORTANCE OF INFORMATION ABOUT THE ENVIRONMENT AND ITS PROBLEMS AS RATED BY THE PROSOCIAL GROUPING

QUESTION	IMPORTANCE Very	Fairly	Not Too	Not	Don
How important is it to teach:					
1. Basic principles of ecology?	74%	13%	9%	0%	4%
2. The importance of forests, lakes, streams & soils?	78%	17%	4%	0%	0%
3. The importance of habitat to Manitoba's wildlife?	83%	13%	0%	4%	0%
How important is it to teach about:					
1. Protection of agricultural lands?	91%	9%	0%	0%	0%
2. Forest management and protection?	65%	26%	4%	0%	0%
3. Conservation and management of water resources?	87%	13%	0%	0%	0%
4. Importance of water quality to aquatic life?	78%	13%	9%	0%	0%
How important is it to teach about the need to:					
1. Conserve tropical rain forests?	61%	30%	0%	4%	4%
2. Protect plant & animal species from becoming extinct?	65%	22%	9%	0%	4%
3. Control world population?	52%	30%	4%	4%	9%
How important is it to teach about:					
1. The causes and effects of air and water pollution?	87%	9%	0%	0%	0%
2. Management and disposal of hazardous wastes?	78%	22%	0%	0%	0%
3. The benefits and risks of various energy sources?	74%	22%	0%	0%	0%
4. The benefits and risks of chemicals such as pesticide	83%	17%	0%	0%	0%
How important is it to teach about:					
1. The causes and effects of damage to the ozone layer?	87%	9%	0%	0%	0%
2. Increasing atmospheric carbon dioxide?	78%	13%	0%	4%	0%
3 Causes and effects of acid rain?	87%	9%	0%	0%	0%
How important is it to teach the value of:					
1. Preserving cultural heritage?	30%	48%	9%	9%	0%
2. Preserving natural heritage such as wilderness areas?	70%	17%	4%	4%	0%
3. Preventing litter and noise pollution?	57%	26%	4%	9%	0%
How important is it to teach about problems as they relate to:					
1. Economic factors?	83%	17%	0%	0%	0%
2. Political factors?	70%	17%	4%	0%	0%
3. Life style?	70%	22%	0%	4%	0%

Occupationally-oriented grouping (13 responses)
Role of Environmental Education: Leaders of occupationally-oriented groups ranked teaching about the environment and its problems highest in importance at 3.65 (table 10). It was rated as very important by 80% of this group (table 11). Teaching how to solve environmental problems and motivating students to work to solve environmental problems were rated as very important by only 40% and 25% of respondents, respectively (table 11). Twenty-five percent of both groups rated the latter as "not too important".

The environment and its problems: Teaching about economic factors and the environment was ranked first (3.45) followed by the causes and effects of acid rain (3.40). Teaching about the importance of preserving cultural heritage (2.51) was ranked lowest (table 12).

Teaching about economic factors in the environment was rated very important by the largest number of these respondents (70%). The causes and effects of air and water pollution was given the second largest number (55%) of "very important" responses (table 13). Teaching the value of preserving cultural heritage was the only item that was considered not important by as many as 20% of the respondents. An additional 15% considered it as not too important.

TABLE 10

ROLE OF ENVIRONMENTAL EDUCATION AS RANKED BY THE OCCUPATIONALLY-ORIENTED GROUPING

QUESTION	
How important is it that students be:	
Taught about the environment and its problems?	3.65
Taught how to solve environmental problems?	2.90
Motivated to work to solve environmental problems?	2.85

TABLE 11

ROLE OF ENVIRONMENTAL EDUCATION AS RATED BY THE OCCUPATIONALLY-ORIENTED GROUPING

	IMPORTANCE				
QUESTION	Very	Fairly	Not Too	Not	Don't Know
How important is it that students be:					
1. Taught about the environment and its problems?	80%	15%	0%	0%	0%
2. Taught how to solve environmental problems?	30%	40%	25%	0%	0%
3. Motivated to work to solve environmental problems?	40%	25%	25%	0%	5%

TABLE 12
THE IMPORTANCE OF INFORMATION ABOUT THE ENVIRONMENT AND ITS PROBLEMS AS RANKED BY THE OCCUPATIONALLY ORIENTED GROUP

QUESTION	
How important is it to teach:	
Economic factors?	3.45
Causes and effects of acid rain?	3.40
The benefits and risks of chemicals such as pesticides?	3.35
Basic principles of ecology?	3.35
The causes and effects of air and water pollution?	3.35
Forest management and protection?	3.30
Preventing litter and noise pollution?	3.30
Protect plant & animal species from becoming extinct?	3.30
The benefits and risks of various energy sources?	3.20
The importance of forests, lakes, streams & soils?	3.20
Conservation and management of water resources?	3.15
Protection of agricultural lands?	3.15
Importance of water quality to aquatic life?	3.10
Conserve tropical rain forests?	3.10
Management and disposal of hazardous wastes?	3.05
Control world population?	3.05
Life style?	3.05
The importance of habitat to Manitoba's wildlife?	3.00
Increasing atmospheric carbon dioxide?	2.95
Preserving natural heritage such as wilderness areas?	2.95
The causes and effects of damage to the ozone layer?	2.95
Political factors?	2.90
Preserving cultural heritage?	2.55

TABLE 13

THE IMPORTANCE OF INFORMATION ABOUT THE ENVIRONMENT AND ITS PROBLEMS AS RATED BY THE OCCUPATIONALLY ORIENTED GROUP

QUESTION	IMPORTANCE Very	Fairly	Not Too	Not	
How important is it to teach:					
1. Basic principles of ecology?	50%	45%	0%	0%	0%
2. The importance of forests, lakes, streams & soils?	35%	60%	0%	0%	0%
3. The importance of habitat to Manitoba's wildlife?	30%	50%	15%	0%	
How important is it to teach about:					
1. Protection of agricultural lands?	50%	30%	10%	5%	0%
2. Forest management and protection?	50%	40%	5%	0%	0%
3. Conservation and management of water resources?	45%	40%	5%	5%	0%
4. Importance of water quality to aquatic life?	45%	30%	20%	0%	0%
How important is it to teach about the need to:					
1. Conserve tropical rain forests?	45%	35%	10%	5%	0%
2. Protect plant & animal species from becoming extinct?	50%	40%	5%	0%	0%
3. Control world population?	45%	30%	15%	5%	0%
How important is it to teach about:					
1. The causes and effects of air and water pollution?	55%	35%	5%	0%	0%
2. Management and disposal of hazardous wastes?	45%	25%	25%	0%	0%
3. The benefits and risks of various energy sources?	55%	20%	20%	0%	0%
4. The benefits and risks of chemicals such as pesticide	50%	45%	0%	0%	0%
How important is it to teach about:					
1. The causes and effects of damage to the ozone layer?	35%	35%	25%	0%	0%
2. Increasing atmospheric carbon dioxide?	35%	35%	25%	0%	0%
3 Causes and effects of acid rain?	55%	40%	0%	0%	0%
How important is it to teach the value of:					
1. Preserving cultural heritage?	25%	35%	15%	20%	0%
2. Preserving natural heritage such as wilderness areas?	35%	40%	15%	5%	0%
3. Preventing litter and noise pollution?	50%	40%	5%	0%	0%
How important is it to teach about problems as they relate to:					
1. Economic factors?	70%	20%	0%	5%	0%
2. Political factors?	35%	40%	10%	10%	0%
3. Life style?	30%	60%	0%	5%	0%

Industry and commerce grouping (19 responses)
Role of Environmental Education: This grouping ranked teaching about the environment and its problems (3.93, table 14) highest in importance with 93% rating it as very important (table 13). In contrast teaching how to solve environmental problems and motivating students to work to solve environmental problems were both rated as very important by only 47% of respondents (table 15).

The environment and its problems: Teaching about the causes and effects of water pollution (3.87) and economic factors in the environment (3.57) were ranked highest in importance by leaders of business and commerce while teaching about control of world population (3.13) and preserving cultural heritage (3.13) were ranked lowest (table 16).

Teaching about the causes and effects of air and water pollution and economic factors in the environment were considered very important by the largest number of respondents, 87% and 73% respectively (table 17).

Two items tied for the lowest percentage of "very important" responses (33%). These were, teaching about the need to preserve tropical rain forests and increasing atmospheric carbon dioxide in the atmosphere. However, when the percentage of "fairly important" responses were added in, totals for each exceeded 85%. Twenty percent of these respondents considered teaching about world population and life style and the environment as not too important and 7% did not consider it important to teach about controlling world population.

TABLE 14

ROLE OF ENVIRONMENTAL EDUCATION AS RANKED BY THE INDUSTRY AND COMMERCE GROUPING

QUESTION	
How important is it that students be:	
Taught about the environment and its problems?	3.93
Taught how to solve environmental problems?	3.20
Motivated to work to solve environmental problems?	3.20

TABLE 15

ROLE OF ENVIRONMENTAL EDUCATION AS RATED BY THE INDUSTRY AND COMMERCE GROUPING

	IMPORTANCE				
QUESTION	Very	Fairly	Not Too	Not	Don't Know
How important is it that students be:					
1. Taught about the environment and its problems?	93%	7%	0%	0%	0%
2. Taught how to solve environmental problems?	47%	40%	7%	0%	7%
3. Motivated to work to solve environmental problems?	47%	33%	13%	7%	0%

TABLE 16

THE IMPORTANCE OF INFORMATION ABOUT THE ENVIRONMENT AND ITS PROBLEMS AS RANKED BY THE INDUSTRY AND COMMERCE GROUPING

QUESTION	
How important is it to teach about:	
The causes and effects of air and water pollution?	3.87
Economic factors?	3.67
Protection of agricultural lands?	3.60
Basic principles of ecology?	3.53
The benefits and risks of chemicals such as pesticides?	3.47
Protect plant & animal species from becoming extinct?	3.47
Forest management and protection?	3.40
Management and disposal of hazardous wastes?	3.40
Conservation and management of water resources?	3.40
The importance of habitat to Manitoba's wildlife?	3.40
Preserving natural heritage such as wilderness areas?	3.40
The importance of forests, lakes, streams & soils?	3.40
The benefits and risks of various energy sources?	3.33
Political factors?	3.33
The causes and effects of damage to the ozone layer?	3.33
Causes and effects of acid rain?	3.33
Importance of water quality to aquatic life?	3.33
Preventing litter and noise pollution?	3.27
Life style?	3.27
Increasing atmospheric carbon dioxide?	3.20
Conserve tropical rain forests?	3.20
Preserving cultural heritage?	3.13
Control world population?	3.13

TABLE 17

THE IMPORTANCE OF INFORMATION ABOUT THE ENVIRONMENT AND ITS PROBLEMS AS RATED BY THE INDUSTRY AND COMMERCE GROUPING

QUESTION	IMPORTANCE Very	Fairly	Not Too	Not	Don't Know
How important is it to teach:					
1. Basic principles of ecology?	60%	33%	7%	0%	0%
2. The importance of forests, lakes, streams & soils?	40%	60%	0%	0%	0%
3. The importance of habitat to Manitoba's wildlife?	40%	60%	0%	0%	0%
How important is it to teach about:					
1. Protection of agricultural lands?	67%	27%	7%	0%	0%
2. Forest management and protection?	47%	47%	7%	0%	0%
3. Conservation and management of water resources?	47%	47%	7%	0%	0%
4. Importance of water quality to aquatic life?	47%	40%	13%	0%	0%
How important is it to teach about the need to:					
1. Conserve tropical rain forests?	33%	53%	13	0%	0%
2. Protect plant & animal species from becoming extinct?	47%	53%	0%	0%	0%
3. Control world population?	47%	27%	20%	7%	0%
How important is it to teach about:					
1. The causes and effects of air and water pollution?	87%	13%	0%	0%	0%
2. Management and disposal of hazardous wastes?	60%	20%	20%	0%	0%
3. The benefits and risks of various energy sources?	53%	27%	20%	0%	0%
4. The benefits and risks of chemicals such as pesticide	60%	27%	13%	0%	0%
How important is it to teach about:					
1. The causes and effects of damage to the ozone layer?	47%	40%	13%	0%	0%
2. Increasing atmospheric carbon dioxide?	33%	53%	13%	0%	0%
3 Causes and effects of acid rain?	47%	40%	13%	0%	0%
How important is it to teach the value of:					
1. Preserving cultural heritage?	40%	33%	27%	0%	0%
2. Preserving natural heritage such as wilderness areas?	60%	20%	20%	0%	0%
3. Preventing litter and noise pollution?	40%	47%	13%	0%	0%
How important is it to teach about problems as they relate to:					
1. Economic factors?	73%	20%	7%	0%	0%
2. Political factors?	47%	40%	13%	0%	0%
3. Life style?	47%	33%	20%	0%	0%

Rankings of environmental content items by the three groupings and total responses are compared in table 18. Economic factors are clearly identified as the most important in the overall rating of content.

TABLE 18

COMPARISON OF RANKINGS OF ENVIRONMENTAL CONTENT ITEMS

Item	GROUPING* 1	2	3	4
1. Basic principles of ecology, applied to Manitoba.	7	14	4	4
2. The ecological importance of Manitoba's forests, lakes, streams, and soils.	8	6	10	12
3. The importance of habitat to Manitoba's wildlife.	12	7	18	10
4. Protection of agricultural land.	3	1	12	3
5. Forest management and protection.	10	16	6	7
6. Conservation of water resources	6	2	11	9
7. Importance of water quality.	15	8	13	17
8. Conserve tropical rain forests.	17	19	14	21
9. Prevent species from becoming extinct.	13	17	8	6
10. Control world population.	22	22	16	23
11. Causes and effects of air and water pollution.	2	10	5	1
12. Management and disposal of hazardous wastes.	11	5	15	8
13. Benefits and risks of energy sources.	9	12	9	13
14. Benefits and risks of pesticides.	4	3	3	5
15. Causes and effects of damage to the ozone layer.	14	9	21	15
16. Increasing atmospheric carbon dioxide.	18	13	19	20
17. Causes and effects of acid rain.	5	11	2	16
18. Preserving cultural heritage.	23	23	23	22
19. Preserving natural heritage.	20	18	20	11
20. Preventing litter and noise.	19	21	7	18
21. Economic factors.	1	4	1	2
22. Political factors.	21	20	22	14
23. Life style.	16	15	17	19

*1 = total; 2 = prosocial, 3 = occupational, 4 = industry

The Importance of Environmental Education in the Curriculum

Respondents ranked Environmental Education (3.36) high among school subjects, (table 19), well ahead of such subjects as Physical Education (3.11), French (2.87), Music (2.59), and Home Economics (2.52).

Only 48% of respondents considered Environmental Education very important. When combined with the "fairly important" responses, the total increased to 90% (table 20). Only 7% of respondents considered the subject not too important and none considered it not important.

The prosocial grouping ranked Environmental Education (3.52) ahead of literature (3.39) and geography (3.30), just below history (table 21). A greater percentage of these respondents considered Environmental Education very important (70%) and a total of 91% considered the subject either very important or fairly important (table 22). A small percentage (4%) considered it as not too important while none considered it not important.

TABLE 19

SCHOOL SUBJECTS RANKED BY IMPORTANCE (ALL RESPONDENTS)

QUESTION	
How important do you consider each of the following?	
English	3.84
Mathematics	3.80
Science	3.66
History	3.51
Health	3.51
Geography	3.41
Literature	3.38
Environmental Education	3.36
Physical Education	3.11
French	2.87
Music	2.59
Industrial Arts	2.57
Art	2.56
Home Economics	2.52

TABLE 20

SCHOOL SUBJECTS RATED BY IMPORTANCE (ALL RESPONDENTS)

	IMPORTANCE				
QUESTION	Very	Fairly	Not Too	Not	Don't Know
How important do you consider each of the following?					
Industrial Arts	13%	41%	38%	7%	0%
French	28%	41%	23%	7%	0%
Environmental Education	48%	44%	7%	0%	0%
English	89%	10%	0%	0%	0%
Geography	54%	39%	3%	0%	0%
Literature	54%	36%	7%	0%	0%
Mathematics	85%	13%	0%	0%	0%
Physical Education	36%	48%	10%	5%	0%
Music	11%	48%	31%	8%	0%
Home Economics	10%	44%	36%	8%	0%
History	61%	33%	5%	0%	0%
Art	18%	39%	30%	7%	0%
Science	79%	15%	3%	0%	0%
Health	59%	36%	3%	0%	0%

TABLE 21

SCHOOL SUBJECTS RANKED BY IMPORTANCE (PROSOCIAL GROUPING)

QUESTION	
How important do you consider each of the following?	
English	3.78
Science	3.78
Mathematics	3.74
Health	3.61
History	3.52
Environmental Education	3.52
Literature	3.39
Geography	3.30
Physical Education	3.26
Environmental Field Trips	2.74
French	2.74
Home Economics	2.61
Music	2.61
Art	2.43
Industrial Arts	2.39

TABLE 22

SCHOOL SUBJECTS RATED BY IMPORTANCE (PROSOCIAL GROUPING)

QUESTION	IMPORTANCE				
	Very	Fairly	Not Too	Not	Don't Know
How important do you consider each of the following?					
Industrial Arts	4%	52%	26%	13%	0%
French	26%	43%	13%	13%	0%
Environmental Education	70%	22%	4%	0%	0%
English	91%	4%	0%	0%	0%
Geography	57%	35%	0%	0%	0%
Literature	65%	26%	0%	0%	0%
Mathematics	87%	9%	0%	0%	0%
Physical Education	52%	35%	4%	4%	0%
Music	13%	48%	30%	4%	0%
Home Economics	17%	48%	17%	13%	0%
History	65%	30%	0%	0%	0%
Art	17%	39%	26%	4%	0%
Science	91%	4%	0%	0%	0%
Health	74%	22%	0%	0%	0%

Respondents from occupationally-oriented groups did not rank Environmental Education (3.00) as highly among the school subjects as did respondents in prosocial groups (table 23). Only 15% of this grouping considered Environmental Education as very important, but 70% of them considered it fairly important (table 24). None considered it to be not important.

Respondents in the industry and commerce grouping (table 25) ranked Environmental Education equally with health and literature (3.27) and ahead of physical education (2.93) and French (2.87). Of this group, 47% responded that Environmental Education is very important and an equal percentage that is fairly important for a total of 93% (table 26). None considered it not too important or not important.

TABLE 23

SCHOOL SUBJECTS RANKED BY IMPORTANCE (OCCUPATIONALLY-ORIENTED GROUPING)

QUESTION	
How important do you consider each of the following?	
English	3.90
Mathematics	3.85
Geography	3.45
History	3.45
Health	3.40
Science	3.40
Literature	3.30
Physical Education	3.00
Environmental Education	3.00
French	2.90
Industrial Arts	2.80
Art	2.50
Music	2.35
Home Economics	2.30

TABLE 24

SCHOOL SUBJECTS RATED BY IMPORTANCE (OCCUPATIONALLY-ORIENTED GROUPING)

	IMPORTANCE				
QUESTION	Very	Fairly	Not Too	Not	Don't Know
How important do you consider each of the following?					
Industrial Arts	35%	15%	45%	5%	0%
French	30%	35%	30%	5%	0%
Environmental Education	15%	70%	15%	0%	0%
English	90%	10%	0%	0%	0%
Geography	45%	55%	0%	0%	0%
Literature	45%	40%	15%	0%	0%
Mathematics	85%	15%	0%	0%	0%
Physical Education	30%	45%	20%	5%	0%
Music	5%	45%	30%	20%	0%
Home Economics	0%	40%	50%	10%	0%
History	50%	45%	5%	0%	0%
Art	15%	35%	35%	15%	0%
Science	60%	30%	5%	0%	0%
Health	45%	50%	5%	0%	0%

TABLE 25

SCHOOL SUBJECTS RANKED BY IMPORTANCE (INDUSTRY AND COMMERCE GROUPING)

QUESTION	
How important do you consider each of the following?	
Science	3.73
Mathematics	3.67
English	3.60
History	3.33
Geography	3.33
Literature	3.27
Environmental Education	3.27
Health	3.27
Physical Education	2.93
French	2.87
Industrial Arts	2.73
Music	2.67
Art	2.67
Home Economics	2.53

TABLE 26
SCHOOL SUBJECTS RATED BY IMPORTANCE (INDUSTRY AND COMMERCE GROUPING)

QUESTION	IMPORTANCE				
	Very	Fairly	Not Too	Not	Don't Know
How important do you consider each of the following?					
Industrial Arts	27%	33%	33%	0%	0%
French	33%	33%	27%	0%	0%
Environmental Education	47%	47%	0%	0%	0%
English	80%	13%	0%	0%	0%
Geography	60%	27%	7%	0%	0%
Literature	53%	33%	7%	0%	0%
Mathematics	87%	7%	0%	0%	0%
Physical Education	27%	60%	0%	7%	0%
Music	20%	40%	33%	0%	0%
Home Economics	13%	40%	40%	0%	0%
History	67%	13%	13%	0%	0%
Art	27%	40%	20%	0%	0%
Science	93%	0%	0%	0%	0%
Health	53%	33%	7%	0%	0%

Environmental Field Trips

While many questions about field trips were raised by respondents in their comments, there was support for field trips (table 27). The prosocial grouping registered the strongest support for field trips with 74% considering field trips as very or fairly important. The occupationally-oriented grouping was least supportive of field trips.

TABLE 27

IMPORTANCE OF ENVIRONMENTAL FIELD TRIPS
PERCENT OF RESPONDENTS MARKING EACH LEVEL*

Grouping	Importance				Don't Know
	Very	Fairly	Not Too	Not	
Overall	27.87	32.79	11.48	3.28	3.28
Prosocial	43.48	30.43	4.35	0	0
Occupationally-oriented	10.00	30.00	20.00	10.0	10.0
Industry-commerce	26.67	40.00	13.33	0	0

*Percents do not total 100 because all respondents did not mark each item.

Comments by Respondents

Respondents proffered a total of 48 comments (Appendix II). Comments on the importance of Environmental Education emphasized its importance. For example, one respondent commented, "In probably all cases "very important" is the responsible answer. This should be a top priority for all people of all ages." Another stated, "This questionnaire was filled out by one person with input from five other members. We have no position paper on the environment but the general consensus is that it is a vital concern."

Many respondents suggested that Environmental Education should be integrated into other subjects in the curriculum while some suggested that it be experience-based. Some respondents experienced difficulty rating one topic as more important than another. Some concern about objectivity was expressed along with the suggestion that teaching about the environment be emphasized as opposed to teaching how to solve environmental problems or motivating students to want to solve environmental problems.

The item relating to the need to control world population evoked several comments. Some respondents commented that with rising living standards, the problem would solve itself. Others objected to the "developed countries" prescribing to the "developing countries".

DISCUSSION AND CONCLUSIONS

This survey has demonstrated a strong mandate for Environmental Education, a mandate emanating from across the social spectrum. Eighty-six percent of respondents considered teaching about the environment and its problems very important. None considered it less than "fairly important". Environmental Education was ranked in importance among the traditional basic subjects in the curriculum. All comments emphasized the importance of Environmental Education (Appendix II).

It seems reasonable to interpret explanations such as "not a concern of my organization" and "the questions were too personal" as apathy. Apathetic persons are unlikely to be a significant influence on public policy. Accordingly, it seems appropriate to disregard individuals who did not respond when interpreting the results.

In light of the present "back to basics" movement, the high ranking among school subjects that respondents assigned to Environmental Education implies a public sense that basic education includes Environmental Education. As one respondent stated it:

> The urgency of environmental education cannot be stressed enough. This subject should be taught starting from grade one, on a compulsory basis. I feel there is a need for special programs designed to also educate or make better aware the older generation as they lack any understanding and therefore may not be supportive in giving proper guidance and encouragement to the younger generation.

Why were some topics rated more important than others? Media publicity appears to have been a factor. The relationship between economic factors and the environment has received greater attention from the media than in the past. The Brundtland Commission Report which emphasized economics and the environment was widely reported and would likely have been noted by the kinds of people to whom the survey was directed. Concerns such as air and water pollution and pesticides have been discussed in the media for a long time.

The relatively low ranking and high percentage (10%) of "not important" responses given "preservation of cultural heritage" could be the result of confusion about the meaning of the item as well as less media exposure. The meaning of "Preservation of cultural heritage" is preservation of things that are important to Canadian culture and history, for example, historical sites and artifacts. Some respondents may have misinterpreted "cultural heritage" to mean French language.

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If they were opposed to bilingualism, these respondents might have rated "Preservation of cultural heritage as "Not Important".

The relatively low ranking of teaching about "Control of world population" may have been influenced by personal opposition to population control measures. Evidence for this hypothesis is that as in the case of "The importance of preserving cultural heritage", many respondents (5%) indicated that teaching about world population is "Not Too Important".

Environmental field trips were poorly supported in comparison to other aspects of Environmental Education. Concern about cost effectiveness and poor planning may have been factors in the relatively low rating of field trips. Concerns about field trips may well be summarized in the following comments by respondents:

> There is a wealth of audio-visual material available for classes. Field trips are very expensive and I believe parents can get involved and provide this hands on experience.
>
> Field trips are unlikely to be as effective in teaching concepts as a well designed unit in science, geography, or history. It takes a special type of teacher to run a good field trip. One will find the support from parents for funds if needed. Most school field trips are not that well planned, organized or run. This would usually be a waste of money and staff time.

RECOMMENDATIONS

The school curriculum should reflect the needs and aspirations of society. Curriculum planners must strike a balance among the various groups making up our heterogeneous society. The results of this survey clearly demonstrate that Environmental Education is a legitimate subject area for inclusion in the curriculum.

While, as the earlier EERC report revealed, Environmental Education is well represented in Manitoba's curriculum guides, there is no guarantee that it will be taught. At the secondary level, topics related to Environmental Education most often appear in the optional sections of the guides. At the lower grade levels, the trend seems to be to teach the traditional basics of the curriculum, leaving little if any time for Environmental Education.

In view of the findings of this survey, the following are recommended:

1. That priority be assigned to Environmental Education in the school curriculum commensurate with its importance relative to other subjects as revealed by this survey. To this end, greater emphasis should be given to Environmental Education in the core curriculum at the secondary level. Teachers at the elementary level should be encouraged to implement the environmental objectives in the current curriculum guides.

2. That the subject matter of Environmental Education in the curriculum reflect the concerns revealed in this survey, e.g. that economic factors relating to environmental problems be included at appropriate places in the curriculum.

3. That Environmental Education insofar as practicable be integrated into the present curriculum subjects rather than being taught as a separate subject.

4. That in-service training in interdisciplinary approaches to Environmental Education be inaugurated.

5. That field trips be used only where cost effective and that teachers who lead field trips be properly trained in planning and conducting field trips.

6. That a provincial coordinator for Environmental Education be appointed by Education Manitoba to provide leadership in and facilitation for Environmental Education.

APPENDIXES

APPENDIX I

ENVIRONMENTAL EDUCATION IN MANITOBA
CONCEPTS AND ISSUES: WHAT
SHOULD SCHOOLS TEACH?

To assure confidentiality of your response:

The letter circled below is the code for the "stakeholder"category into which your response is to be placed. When we receive your response, we will immediately remove this cover sheet and use it as a record that you have responded. Once this has been done, there will be no way to connect your response with your name.

When you complete this questionnaire, insert it in the enclosed stamped, self-addressed envelope and place it in return mail. Your response is important. The results of this survey could have a direct influence on the direction of environmental education in Manitoba.

I would like a copy of the final report. Yes_____ No_____

A B C D E F G H I J K L M N

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ENVIRONMENTAL EDUCATION IN MANITOBA

The Role of Environmental Education

William B. Stapp, a prominent environmental educator, defines the role of environmental education as making people; 1) knowledgeable about the environment and its problems 2) aware of how to help solve environmental problems 3) motivated to work toward solving environmental problems.

How important do you think it is that students be:

	Very important	Fairly important	Not Too important	Not important	Don't Know	Comments
1. Taught about the environment and its problems?						
2. Taught how to solve environmental problems?						
3. Motivated to work to solve environmental problems?						

The Environment and its Problems

A. Our environment consists of everything outside ourselves; the world of physical objects, the various species of plants, animals and other organisms, the air, water, and sun, and our fellow humans. We depend upon our environment and affect it in a multitude of ways.

How important is it to teach:

	Very important	Fairly important	Not Too important	Not important	Don't Know	Comments
1. Basic principles of ecology, particularly as they apply to Manitoba?						
2. The ecological importance of Manitoba's forests, lakes, streams, and soils?						
3. The importance of habitat to Manitoba's wildlife?						

B. Maurice Strong, Canada's representative on the World Commission on Environment and Development, has stated that sustained economic prosperity depends upon wise use of Earth's resources.

How important is it to teach about:

	Very important	Fairly important	Not Too important	Not important	Don't Know	Comments
1. Protection of agricultural land from loss by urban development and soil erosion?						

	Very Important	Fairly Important	Not Too Important	Not Important	Don't Know	Comments
2. Forest management and protection?						
3. Conservation and management of Manitoba's water resources?						
4. The importance of water quality to fish and other aquatic life?						

C. Agriculture, urban development, and demand for resources by industrial nations coupled with pressure from increasing population in the third world are leading to the destruction of woodlands and tropical forests. As a result many species of plants and animals are becoming extinct.

How important is it to teach about the need to:

	Very Important	Fairly Important	Not Too Important	Not Important	Don't Know	Comments
1. Conserve tropical rain forests?						
2. Protect plant and animal species from becoming extinct?						
3. Control world population?						

D. Modern industrial society uses enormous quantities of energy and raw materials and produces vast quantities of waste, including many substances that do not occur naturally. Pollution threatens many of Manitoba's lakes, streams, and ground water supplies.

How important is it to teach about:

	Very Important	Fairly Important	Not Too Important	Not Important	Don't Know	Comments
1. The causes and effects of air and water pollution?						
2. Management and disposal of hazardous wastes such as toxic and nuclear wastes?						
3. The benefits and environmental risks of various energy sources?						
4. The benefits and environmental risks of chemicals such as pesticides, in the environment?						

E. Earth's atmosphere is being altered by gases resulting from the burning of fossil fuels (coal, petroleum, natural gas), industrial processes, spray cans, and refrigeration units. Some gases are destroying the ozone layer which protects life on Earth from the sun's ultra-violet rays. Carbon dioxide in the atmosphere from the burning of fossil fuels is raising Earth's temperature and affecting world climates ("Greenhouse effect"). Acid rain from the sulfur in fossil fuels is damaging lakes and forests in the northern hemisphere.

How important is it to teach about:

	Very important	Fairly important	Not Too important	Not important	Don't Know	Comments
1. Causes and effects of damage to the ozone layer?						
2. Increasing atmospheric carbon dioxide?						
3. Causes and effects of acid rain?						

F. A pleasing environment enhances the quality of life. A pleasing environment is interesting, offers a diversity of experience, is safe and is pleasant to the senses. By providing a pleasing environment for its people, Manitoba becomes a more attractive place for people to live.

How important is it to teach the value of:

	Very important	Fairly important	Not Too important	Not important	Don't Know	Comments
1. Preserving cultural heritage?						
2. Preserving natural heritage such as wilderness areas?						
3. Preventing litter and noise pollution?						

G. The causes of and solutions to environmental problems often are economic, political, legal, and/or social in nature or may result from people's life style. For example, a controversial proposal for a cottage development by an Indian band on a lake supplying water to a city may stem from the economic and social needs of the Indian band, have legal implications, and require a political solution. Tropical rain forests may be cleared to provide grazing land for low priced beef because of a life style that includes eating hamburgers at fast food outlets in industrial countries.

How important is it to teach about environmental problems as they relate to:

	Very important	Fairly important	Not Too important	Not important	Don't Know	Comments
1. Economic factors?						

	Very Important	Fairly Important	Not Too Important	Not Important	Don't Know	Comments
2. Political factors?						
3. Life style?						

Importance of Environmental Education

In recent years education has gone "back to the basics", reducing the time spent on subjects such as environmental education. To save money, field trips and other out-of-school activities related to environmental education have been either sharply curtailed or eliminated altogether.

How important do you consider each of the following?

	Very Important	Fairly Important	Not Too Important	Not Important	Don't Know
Shop (Industrial Arts)					
French					
Environmental Education					
English					
Geography					
Literature					
Mathematics					

	Very Important	Fairly Important	Not Too Important	Not Important	Don't Know
Physical Education					
Music					
Home Economics					
History					
Art					
Science					
Health					

Financial support for field trips and other out-of-school activities related to environmental education.

COMMENTS

APPENDIX II

COMMENTS BY RESPONDENTS

Importance of Environmental Education

In probably all cases "very important" is the responsible answer. This should be a top priority for all people of all ages.

I think Environmental Education (if well done) would have great interest to students as something relevant and meaningful. Issues of environment can't be separated from issues of peace and justice (so I also rate history very important) so you might as well sell the whole package.

It is very important to educate children in all subjects which affect our environment, if future generations are to be given the opportunity to live in a world which will meet their physical and mental needs.

I feel having the students educated on their environment is important for everyone.

I don't know where you'd start but we definitely need change in people's awareness of the environment and how we are abusing nature.

Society is becoming increasingly detached from the environment, both physically, as we become more urban, and psychologically. Awareness/knowledge of the environment is absolutely critical if people are to make sound environmental decisions, individually and collectively through the political system!

The urgency of environmental education cannot be stressed enough. This subject should be taught starting from grade one, on a compulsory basis. I feel there is a need for special programs designed to also educate or make better aware the older generation as they lack any understanding and therefore may not be supportive in giving proper guidance and encouragement to the younger generation.

This questionnaire was filled out by one person with input from five other members. We have no position paper on the environment but the general consensus is that it is a vital concern.

School system should deal with all of the above. Surely there is time in the education system and its several years of duration to include meaningful environmental education.

On Educational Strategies

We should all be informed/educated. I hope this considered for the public school level. Solving environmental problems should be considered a separate area of education.

These choices could be completely wrong for some kids or at some levels. I think there is a need to learn fundamentals first (e.g. chemistry and physics) before plunging into aerosols, CO_2 and the Greenhouse Effect.

I believe that many of the so-called "basic" subjects can be integrated with the topics of environmental education, (math, geography, science, health, reading etc.) and that an integrated, more holistic education is the best possible one.

I believe that environmental awareness should not end with the school bell but should be with a person for the rest of his/her life and change his/her lifestyle. This is especially important in personal pollution eg. litter, noise, and environment protection eg. better personal awareness of trees, plants, animal life and the harm an individual can do.

It's not that I don't think these concepts are important. (They are my life's work). I feel, however, that if we teach awareness, appreciation, and understanding of such resources through experience, they will become more important to students. In short, we should show them that they are important.

The ONLY reason I do not say these objectives are very important is that I feel we might be much farther ahead fostering awareness, appreciation and understanding of the environment in grade school. If we could do that successfully, we would have the people that would champion environmental causes through their further studies and throughout their life.

It is difficult to check off what's important. All these subjects are important if we are to provide a well rounded education. Environmental Education can be incorporated into many subjects though so it needn't be a situation where if we teach more outdoor education, something else has to go. For example; outdoor education concepts could be taught as:

1. An ecology section in SCIENCE
2. Outdoor sports on PHYSICAL EDUCATION that put participants in touch with their environment
3. Nutrition in HOME ECONOMICS and HEALTH
4. Environmental subjects in ART etc.

Why does Environmental Education appear as a separate issue? Even 35 years ago, certain important environmental issues were included in the geography and science "units".

It is difficult to determine what grade levels concepts would be taught at. Some of your questions concern concepts that would be taught to grade 4, 5, and up. Others not until high school.

Properly developed and balanced Science programs will provide students with the facts necessary to make rational decisions related to environmental issues. The "Green Peace" approach as we know it has succeeded in "turning off" my support and that of my children because they represent the privileged in the country attempting to dictate to the less privileged and forcing them into accepting a lesser living standard. The sad part is that many so called environmentalists are lazy and have not developed technical arguments to support their claims.

I think education can be more creative, using environmental education in all subjects. It doesn't have to be an expensive extra (as French immersion is). If we could become as concerned with our environment as we are about speaking French, we could go a long way. I don't mean that French is bad, but Environmental Education is even more important. Some examples of outdoor education in integrated classes include using Silent Spring in literature classes.

Field Trips

There is a wealth of audio-visual material available for classes. Field trips are very expensive and I believe parents can get involved and provide this hands on experience. Environmental Education should not be a subject in itself but integrated into the science cause, geography and social studies.

Field trips are unlikely to be as effective in teaching concepts as a well designed unit in science, geography, or history. It takes a special type of teacher to run a good field trip. One who will find the support from parents for funds if needed. Most school field trips are not that well planned, organized or run. This would usually be a waste of money and staff time.

Field trips, a basic source of "State of the Art" applications of all aspects of life not just the environment, and as such are very important if well directed and instructed by knowledgeable educators. An educator without knowledge on a field trip can be detrimental to all phases of education process.

Selection of teachers of prime importance as personal bias is easily injected into "motherhood" topics - i.e. it's so simple everyone knows the right answer!

The Need for Teaching Specific Objectives

Field trips should include agricultural sites to teach where and how food is produced.

In my mind, habitat is the real critical factor. We see quite a bit on various media that would lead to at least have some appreciation of animals (especially large furry ones). However, I don't think we see as much on the critical importance of habitat. For example, it would be nice to maintain high populations of ducks. However, this is increasingly difficult to do as we drain potholes. Most of the economic arguments (in a farmer's mind) are still in favour of draining land.

I am concerned that you have not linked occupational and environmental health issues.

I think it is extremely important to teach about the protection of agricultural land from loss by urban development and soil erosion.

There is an urgent need to teach the significance of conserving our soil resource in order to sustain agricultural production. Agricultural environmental concerns must consider a risk to benefit approach. Consumers in Canada must be aware of the importance of agricultural production to Canada's G.N.P. and that certain environmental concerns (particularly in the area of livestock production) will not always be totally acceptable to urbanites.

Impossible to sit here in the First or Second World and decide that the Third World is doing things wrong or right! More important to discuss the seasons for rain forest harvesting. (Not acceptable to save forests at all costs when people are starving or a culture or way of life becomes extinct! If we (Industrial world) demand teak furniture, mahogany doors, etc. then forests will be cut.

<u>Education in General</u>

More stress put on being a Canadian first!

All the issues that are presented in this questionnaire are important, however, can the school provide everything to everybody? The reality is that the school day should be extended.

Quality education is very important. Although priorities may vary, I could not rate any aspects as "not too important" or lower. My bias facet on background is toward the sciences and environmental education. English if also essential in relation to optional communication skills.

Answers to the last question attempt to give relative rather than absolute weight to the importance of various subjects.

During the present farm crisis agricultural communities cannot afford to fund the elaborate education system that is in place, either through direct or indirect taxes. The basic subjects must be taught but non- essentials such as home economics, industrial arts, physical education etc. should be taught through volunteer community organizations such as 4-H, Recreation programs, churches, etc.

A good general curriculum of Environmental Education (whether a course on its own or incorporated into biology or geography) should be taught in the Manitoba school system. The result would be a better informed public, which would be more capable of assessing current environmental issues. Today the general public response to these issues is often an emotional one rather than a rational one based on knowledge.

Everyone of the school subject catagories is important at some juncture in the child's schooling to give the child one accurate picture of the cultural life he has inherited. Surely the wise educators can blend the new challenge and knowledge of environmental matters into existing subject catagories- as did educators of post generations- in order to perform the true role of educators- giving skills that will better enable the student to cope with and adapt to and ultimately master the environment.

All education is important. Education involving life processes, biomass interaction, solar and photosynthesis effects have become vitally important as ever in the last two decades. Human population, bird and animal survival are vitally intertwined with our environmental health.

Education must be designed to meet the needs of all individuals. Depending on interest and ability, shop subjects are as important to some people (who will run our factories) as science is to other people (we still need doctors). It is not right for outsiders to make a subjective call on the degree of subject importance in the curriculum.

A balanced approached to education is required and environmental education must be viewed in this context.

The basics must be taught in detail at schools. The items have indicated as less than "very important" are very important to individuals however I consider training in these areas to be the responsibility of the individual or of special interest groups and not the responsibility of the population at large.

Environmental Education is ranked as more important than five other commonly taught subjects on the basis that these other five will tend to be learned in students' leisure time, either by natural exposure or in response to a particular aptitude or interest.

We live in a complex world and society, as such all of the subjects are important. To compare importance of one to another to conclude what should be taught and what should not is not realistic. It should be determined that Environmental Education is an important subject on its own merit and the task is to find ways of teaching the public but not at the expense of other important subjects.

The Response Form

Survey questionnaire written from an environmentally slanted viewpoint towards protection and preservation sentiments. All questionnaires should be generic!

It would be a mistake to restrict your thoughts to Manitoba alone, the problems have a much broader significance than that. It is indeed worldwide.

The term "pesticide" creates confusion. Distinction should be made for example, between herbicides and insecticides.

Caution regarding Section E as issues are somewhat incompletely understood and theoretical at this time.